

AMERICAN BEAUTYBERRY *Callicarpa americana* L. Plant Symbol = CAAM2

Contributed by: USDA NRCS NRCS East Texas Plant Materials Center



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Alternate Names

American beautyberry is also known as French mulberry, sourbush, bunchberry, or purple beauty-berry. In Greek, the genus name *Callicarpa* means callos, “beauty” and carpos “fruit”.

Uses

Ethnobotanic: The roots, leaves, and branches were used by various Native American tribes for medicinal purposes to treat malarial fevers and rheumatism. The roots were used to treat dizziness, stomachaches and dysentery. Roots and berries were boiled and drunk to treat colic.

In the early 20th century, farmers would crush the leaves and place them under the harnesses of horses and mules to repel mosquitoes. The farmers rubbed the crushed leaves on themselves to repel mosquitoes and biting bugs. Studies conducted by the Agricultural Research Service has shown two compounds – callicarpenal and intermedeol - are responsible for the repellent.

Wildlife: The fruit is high in moisture content and is an important food source for more than forty species of songbirds including the American Robin, Brown

Thrasher, Purple Finch, and Eastern Towhee. The drupes or clusters are eaten by armadillo, foxes, opossum, raccoon and squirrels. White tailed deer consume the fruit in the fall after leaf drop. They also browse the leaves in summer when highly preferred foods are not available. Protein content of the leaves ranges from 18 percent in spring to 8 percent in fall.

Other: American beautyberry is used as an ornamental shrub in mass plantings, borders and container planting.

Livestock: Cattle browse the twigs in winter and the leaves and twigs in the spring.

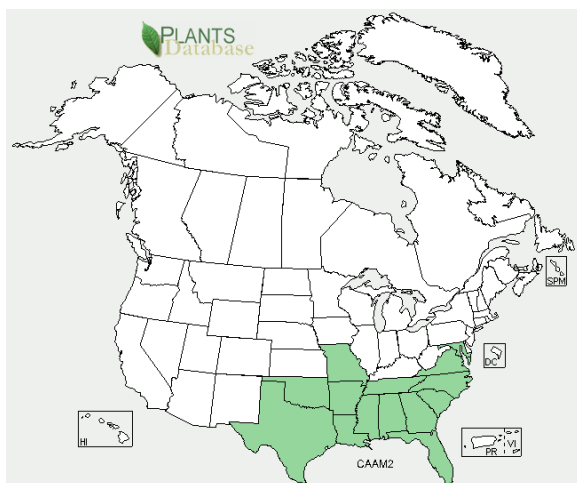
Status

Please consult the PLANTS Web site; <http://plants.usda.gov> and your State Department of Natural Resources for this plant’s current status (e.g., threatened or endangered species, state noxious status, and wetland indicator values).

Description and Adaptation

American beautyberry is a fast growing native perennial shrub; growing five to eight feet tall and almost as wide with drooping branches. The elliptical to ovate shaped leaves have an opposite arrangement with saw toothed margins. The underside of the leaves may be covered with wooly like hairs. The stems are slender, gray to reddish brown, and terete or four sided. In late spring to early summer, inconspicuous flowers of blue, violet, pink, or white are arranged in clusters on the stems between the leaves. In August or September, clusters of small purple to blue berries or drupes encircle the woody stems. Each small berry in the cluster contains two to four seeds about 1/16 in. long.

This plant is distributed throughout the southeastern United States from Texas and Oklahoma east to Maryland. It also grows in the Caribbean and northern Mexico. American beautyberry is found in woods, particularly on moist areas under open pine canopies, thickets, right of ways, and fence rows. It is adapted to moist, loam, sandy or shallow upland sites and a wide pH range. The shrub is considered a pioneer species and is characteristic of the mid stages of plant succession. This plant is very tolerant of fire. However, it is intolerant of deep shade and declines in number when mid-story vegetation is dense.



American beautyberry distribution from USDA-NRCS PLANTS Database.

For updated distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Establishment

American beautyberry can be propagated by transplanting volunteer plants, softwood cuttings, or seeds. Volunteer plants are very hearty and can be dug up and transplanted to a different location. Softwood stem cuttings (4" to 6" long) can be taken in the summer and fall. Dip the cut end into indol -3 – butyric acid (IBA; 1000 ppm) and insert into a rooting media. Keep the temperature of the media between 70-75⁰. Water the cuttings and cover with plastic to keep the material moist. Roots should develop within a few weeks. After rooting begins, remove the plastic at longer intervals each day for seven to ten days.

Afterwards, remove the plastic permanently. The seed is easily gathered by hand picking the mature fruit in the fall. The harvested berries, which contain 2 to 4 seeds each, can be treated in several ways; one is planting the berries in the fall for spring germination. American beautyberry seeds can survive several years in the soil bank. Another way is cleaning the seeds using a kitchen blender for small seedlots. Mix the berries with at least five times their volume of water and pour into the blender. Run the blender at its lowest speed using short bursts of a few seconds at a time to separate the skin and tissue from the seeds. Eventually, mature seeds sink to the bottom, while immature seeds, skins and tissue remain near the top. Check the seeds for possible damage. Pour off the unwanted material and repeat the process two or three times. Eventually, a clean seed sample will be left at the bottom of the blender. Drain the seeds and spread them out to dry. After drying, the seeds are ready for planting or storage in a cool, dry place.

Management

Prune the plants in the fall or winter to maintain its form. Cut away the old stems since the berries are present only on new growth.

Pests and Potential Problems

Some of the diseases which affect this genus include leaf spots (*Atractilina callicarpae*) and black mold (*Meliola cookeana*).

Environmental Concerns

American beautyberry seed is dispersed by birds and animals.

Cultivars, Improved, and Selected Materials (and area of origin)

This plant is available from commercial sources. Some nurseries produce a white fruited plant; *C. Americana* var. *lactea*.

Prepared By: Melinda Brakie, USDA NRCS Plant Materials Center, Nacogdoches, Texas.

Citation

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For more information about this and other plants, please contact your local NRCS field office or Conservation District <<http://www.nrcs.usda.gov/>>, and visit the PLANTS Web site <<http://plants.usda.gov>> or the Plant Materials Program Web site <<http://plant-materials.nrcs.usda.gov>>

Plant Fact Sheet

AMERICAN HOLLY

Ilex opaca Ait.

Plant Symbol = ILOP

Contributed by: USDA NRCS Plant Materials Program



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Uses

The attractive evergreen foliage and bright red fruit of this small tree make it a very popular for landscaping. The same attributes that allow this tree to be a desirable ornamental make it one of the most sought after greens for Christmas decoration. The firm bright red berries are consumed by white-tail deer and 18 species of birds. The dense foliage also provides cover and nesting habitat for various songbirds.

Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g. threatened or endangered species, state noxious status, and wetland indicator values).

Description

American holly normally grows to heights of 15 to 30 feet tall, but records indicate mature heights of up to 100 feet. On the poor soils of coastal beaches, this holly may never exceed shrub size. The bark of it is smooth, and grayish to grayish-brown. The dense branches of this holly grow nearly horizontal in a spreading crown, which takes on a pyramidal silhouette.

The evergreen foliage is stiff and leathery in texture, with large, remotely spined teeth. The leaves are arranged alternately. They are 2 to 4 inches long, satin green and smooth above, and yellowish-green below.

Small, axillary, greenish-white flowers bloom from April to June. Like most others in the holly genus, American holly is dioecious. Pistillate flowers emerge in small clusters from one plant, while staminate flower clusters develop on another. Newly established plants will not flower for 4 to 7 years; prior to flowering there is no practical means of determining the gender of a plant. Bright red, rarely orange or yellow, globular fruit mature from September to October, but may be retained on the plant into the following spring. The berry-like fruit is about 1/3 inch in diameter, and contains 4 to 9 small nutlets. There are an average of 28,430 seeds per pound.

Adaptation and Distribution

American holly grows from Massachusetts to Florida, west to Texas and Missouri, and is adapted to a wide range of site conditions. It grows best on well drained, sandy soils, but will tolerate those which are somewhat poorly drained. This small tree has good shade tolerance, but does well in direct sun. Although this species is often found growing on coastal sand dunes, it is not very salt spray tolerant.

For a current distribution map, please consult the Plant Profile page for this species on the PLANTS Website.

Establishment

Utilize standard tree and shrub planting procedures to establish containerized or balled and burlapped plants. Bare rooted transplants usually have marginal success.

When establishing American holly, it is important to plant males as well as females if berry production is desired. In a nursery situation the gender ratio should be 1:10, males to females. Establish American holly only where surrounding vegetation or physical barriers protect the plants from harsh winds. Holly plants prefer partial shade, with some full sun exposure during the day.

Cultivars, Improved, and Selected Materials (and area of origin)

There are many ornamental varieties, available from commercial nurseries, selected for berry and leaf color. There are also commercial sources of locally and regionally collected material available from native plant nurseries.

Prepared By & Species Coordinator:
USDA NRCS Plant Materials Program

Edited: 05Feb2002 JLK; 060801 jsp

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***Taxodium distichum*: Baldcypress¹**

Edward F. Gilman, Dennis G. Watson, Ryan W. Klein, Andrew K. Koeser, Deborah R. Hilbert, and Drew C. McLean²

Introduction

Narrowly to broadly pyramidal when young, baldcypress, the state tree of Louisiana, eventually develops into a broad-topped, spreading, open specimen when mature. Capable of reaching 100 to 150 feet in height, most landscape specimens are rarely seen in this open form because they are usually much younger and shorter. Trees grow at a moderately fast rate, reaching 40 to 50 feet in about 15 to 25 years. Although it is native to wetlands along running streams, growth is often faster on moist, well-drained soil. The green, needle-like leaves turn a brilliant coppery yellow in fall before dropping, but the bare branches and reddish gray, peeling bark provide much landscape interest during the winter. The trunk grows unusually thick toward the base, even on young trees. The small seeds are used by some birds and squirrels.



Figure 1. Full Form—*Taxodium distichum*: baldcypress

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2. Edward F. Gilman, professor emeritus, Environmental Horticulture Department; Dennis G. Watson, former associate professor, Agricultural Engineering Department; Ryan W. Klein, graduate assistant, Environmental Horticulture Department; Andrew K. Koeser, assistant professor, Environmental Horticulture Department, UF/IFAS Gulf Coast Research and Education Center; Deborah R. Hilbert, graduate assistant, Environmental Horticulture Department, GCREC; and Drew C. McLean, biological scientist, Environmental Horticulture Department, GCREC; UF/IFAS Extension, Gainesville, FL 32611.

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General Information

Scientific name: *Taxodium distichum*

Pronunciation: tack-SO-dee-um DISS-tick-um

Common name(s): Baldcypress

Family: Cupressaceae

USDA hardiness zones: 5A through 10B (Figure 2)

Origin: native to the southeastern United States, in addition to east Texas and Atlantic coastal states as far north as Delaware

UF/IFAS Invasive Assessment Status: Native

Uses: street without sidewalk; screen; specimen; reclamation; parking lot island < 100 sq ft; parking lot island 100–200 sq ft; parking lot island > 200 sq ft; sidewalk cutout (tree pit); tree lawn 4–6 feet wide; tree lawn > 6 ft wide; urban tolerant; highway median; shade; hedge



Figure 2. Range

Description

Height: 60 to 80 feet

Spread: 25 to 35 feet

Crown uniformity: symmetrical

Crown shape: pyramidal, upright/erect

Crown density: dense

Growth rate: fast

Texture: fine

Foliage

Leaf arrangement: alternate

Leaf type: simple

Leaf margin: entire

Leaf shape: linear, lanceolate

Leaf venation: none, or difficult to see

Leaf type and persistence: deciduous

Leaf blade length: ½ - ¾ inch

Leaf color: green

Fall color: yellow to copper

Fall characteristic: showy



Figure 3. Leaf—*Taxodium distichum*: baldcypress

Flower

Flower color: brown

Flower characteristics: not showy



Figure 4. Flower—*Taxodium distichum*: baldcypress

Fruit

Fruit shape: round or ovulate, cone

Fruit length: ½ to 1 inch

Fruit covering: dry or hard

Fruit color: green when young, then turns brown and hard with maturity

Fruit characteristics: attracts birds; not showy; fruit/leaves not a litter problem; resinous



Figure 5. Cone—*Taxodium distichum*: baldcypress

Trunk and Branches

Trunk/branches: branches droop; showy; typically one trunk; no thorns

Bark: gray and/or reddish brown, smooth, fibrous, with extremely shallow or completely lacking furrows, and with a buttressing base

Pruning requirement: little required

Breakage: resistant

Current year twig color: green

Current year twig thickness: thin

Wood specific gravity: 0.46



Figure 6. Knees—*Taxodium distichum*: baldcypress

Culture

Light requirement: full sun to partial shade

Soil tolerances: sand; loam; clay; acidic; slightly alkaline; wet to well-drained

Drought tolerance: high

Aerosol salt tolerance: moderate



Figure 7. Bark—*Taxodium distichum*: baldcypress

Credits: Gitta Hasing

Other

Roots: not a problem

Winter interest: yes

Outstanding tree: yes

Ozone sensitivity: tolerant

Verticillium wilt susceptibility: resistant

Pest resistance: resistant to pests/diseases

Use and Management

Although often seen at water's edge where it will develop "knees", or root projections, that will extend above the water, baldcypress can also be grown in dry locations and makes an attractive lawn, street, or shade tree. Cypress knees do not generally form on these drier sites. Cities from Charlotte, NC, Dallas, TX to Tampa, FL currently use it as a street tree and it should be used more extensively throughout its range in urban landscapes. It provides a good vertical accent to the landscape and should be used more often in urban areas. Baldcypress can be clipped into a formal hedge, creating a wonderful soft screen.

Surprisingly, the roots do not appear to lift sidewalks and curbs as readily as some other species. Its delicate, feathery foliage affords light, dappled shade, and the heartwood of baldcypress is quite resistant to rot. However, most lumber available at lumber yards today is sapwood and is not resistant to rot.

Baldcypress is ideal for wet locations, such as its native habitat of stream banks and mucky soils, but the trees will also grow remarkably well on almost any soil, including heavy, compacted, or poorly-drained muck, except alkaline soils with a pH above 7.5. Locate where the sun will strike the tree on all sides for best symmetrical development. Baldcypress is relatively maintenance-free, requiring pruning only to remove dead wood and unwanted lower branches which persist on the tree. It maintains a desirably straight trunk and a moderately dense canopy and does not form double or multiple leaders as do many other large trees.

The cultivar 'Monarch of Illinois' has a very wide-spreading form and 'Shawnee Brave' has a narrow, pyramidal form, 15 to 20 feet wide. 'Pendens' has drooping branchlets and large cones. *Taxodium ascendens* is native to wet, boggy areas with standing water, whereas *Taxodium distichum* is more common along streams.

Propagation is by seed.

Pests

Bagworms can defoliate portions of the tree. Mites can be particularly troublesome in dry summers without irrigation, causing early leaf browning and defoliation in mid to late summer.

Diseases

Twig blight is caused by a weak pathogen and is usually present on dead or dying tissue. When the tree is stressed the fungus can kill branch tips. Dead tips can be pruned off. Do not let dead or diseased branches remain on the tree. Keep trees healthy with regular fertilization.

References

Koeser, A. K., Hasing, G., Friedman, M. H., and Irving, R. B. 2015. Trees: North & Central Florida. Gainesville: University of Florida Institute of Food and Agricultural Sciences.

Koeser, A.K., Friedman, M.H., Hasing, G., Finley, H., Schelb, J. 2017. Trees: South Florida and the Keys. Gainesville: University of Florida Institute of Food and Agricultural Sciences.

Ilex cassine: Dahoon Holly¹

Edward F. Gilman, Dennis G. Watson, Ryan W. Klein, Andrew K. Koeser, Deborah R. Hilbert, and Drew C. McLean²

Introduction

Attractive when tightly clipped into a tall screen or allowed to grow naturally into its single-trunked, small tree form, dahoon holly is ideal for a variety of landscape settings. Capable of reaching 40 feet in height, dahoon holly is usually seen at a height of 20 to 30 feet with an 8 to 12-foot spread. The smooth, supple, shiny dark green, evergreen leaves, two to three inches long, have just a few serrations near the tip. Possessing male and female flowers on separate plants, at least two dahoon hollies (male and female) must be planted in the landscape to ensure production of the brilliant red berries in fall and winter. The berries serve as an excellent food source for wildlife but are far less prevalent than on East palatka or Fosters holly.

General Information

Scientific name: *Ilex cassine*

Pronunciation: EYE-lecks kuh-SIGH-nee

Common name(s): Dahoon holly

Family: Aquifoliaceae

USDA hardiness zones: 7A through 11 (Figure 2)

Origin: native to the southeastern United States

UF/IFAS Invasive Assessment Status: native

Uses: hedge; screen; specimen; street without sidewalk; deck or patio; reclamation; sidewalk cutout (tree pit); tree

lawn 3–4 feet wide; tree lawn 4–6 feet wide; tree lawn > 6 ft wide; urban tolerant; Bonsai; highway median; container or planter



Figure 1. Full Form—*Ilex cassine*: Dahoon holly
Credits: Ed Gilman

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Figure 2. Range

Description

Height: 20 to 30 feet

Spread: 8 to 12 feet

Crown uniformity: irregular

Crown shape: pyramidal, oval

Crown density: open

Growth rate: moderate

Texture: medium

Foliage

Leaf arrangement: alternate

Leaf type: simple

Leaf margin: entire, serrate

Leaf shape: elliptic (oval), oblong

Leaf venation: pinnate

Leaf type and persistence: evergreen

Leaf blade length: 2 to 4 inches

Leaf color: dark green and shiny on top, paler green underneath

Fall color: no color change

Fall characteristic: not showy

Flower

Flower color: male—greenish white; female—white

Flower characteristics: not showy; male—emerges in

branched clusters; female—emerges solitary or in clusters

Flowering: late spring to early summer

Fruit

Fruit shape: round

Fruit length: ¼ inch

Fruit covering: fleshy drupes

Fruit color: yellow, orange, or red

Fruit characteristics: attracts squirrels/mammals; showy; fruit/leaves not a litter problem



Figure 3. Leaf—*Ilex cassine*: Dahoon holly



Figure 4. Flower—*Ilex cassine*: Dahoon holly

Trunk and Branches

Trunk/branches: branches droop; not showy; typically multi-trunked; no thorns

Bark: dark gray, thin, and smooth, becoming scaly with age

Pruning requirement: little required

Breakage: resistant

Current year twig color: green

Current year twig thickness: medium

Wood specific gravity: unknown



Figure 5. Fruit—*Ilex cassine*: Dahoon holly



Figure 6. Bark—*Ilex cassine*: Dahoon holly
Credits: Gitta Hasing

Culture

Light requirement: full sun to partial shade

Soil tolerances: clay; sand; loam; slightly alkaline; acidic; wet to well-drained

Drought tolerance: moderate

Aerosol salt tolerance: moderate

Other

Roots: not a problem

Winter interest: no

Outstanding tree: no

Ozone sensitivity: unknown

Verticillium wilt susceptibility: resistant

Pest resistance: resistant to pests/diseases

Use and Management

Growing well in full sun to partial shade, dahoon holly does best on moist soils since the wet, boggy soils of swamps is its native environment. Dahoon holly can tolerate drier locations with some watering, but often has a thin crown in this environment. It is not recommended in the southern part of its range in a dry, exposed site unless irrigation is provided. It lends itself well to use as a specimen or street tree, and is ideal for naturalizing in moist locations. Little pruning is needed to create a well-structured, strong tree. It appears to adapt well to the confined spaces of urban and downtown landscapes and is tolerant of some salt spray. The crown is fuller in full sun.

Ilex cassine var. *angustifolia*, Alabama dahoon, has narrower, more linear leaves than the species and more abundant but smaller berries. *Ilex myrtifolia* has smaller leaves and fruit, and its cultivar 'Lowe' has yellow berries and dark green foliage.

Propagation is by seeds, which germinate in one year, or by cuttings. Cuttings are preferred since they give plants of a known sex and also root easily.

Pests and Diseases

No pests or diseases are of major concern. A twig gall sometimes forms in response to a fungus infection. Mites can infest foliage on trees planted on dry sites.

References

Koeser, A. K., Hasing, G., Friedman, M. H., and Irving, R. B. 2015. Trees: North & Central Florida. Gainesville: University of Florida Institute of Food and Agricultural Sciences.

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Juniperus virginiana: Red Cedar¹

Edward F. Gilman, Dennis G. Watson, Ryan W. Klein, and Andrew K. Koeser²

Introduction

Red cedar is an evergreen growing 25 to 45 feet tall in an oval, columnar, or pyramidal form (very diverse) and spreading 20 to 30 feet when given a sunny location. It develops a brownish tint in winter in the north and is sometimes used in windbreaks or screens. The fruit is a blue berry on female trees and is ornamental when produced in quantity. Birds devour the fruit and 'plant' it along farm fences and in old abandoned fields. Some botanists consider *J. silicicola* (Southern red cedar) as the same species as *J. virginiana*.

General Information

Scientific name: *Juniperus virginiana*

Pronunciation: joo-NIP-er-us ver-jin-ee-AY-nuh

Common name(s): red cedar, eastern red cedar

Family: Cupressaceae

USDA hardiness zones: 2A through 9B (Figure 2)

Origin: native to the eastern United States and southeastern Canada

UF/IFAS Invasive Assessment Status: native

Uses: urban tolerant; screen; street without sidewalk; reclamation; tree lawn 3-4 feet wide; tree lawn 4-6 feet wide; tree lawn > 6 ft wide; highway median; bonsai; Christmas tree



Figure 1. Full Form - *Juniperus virginiana*: red cedar
Credits: UF/IFAS

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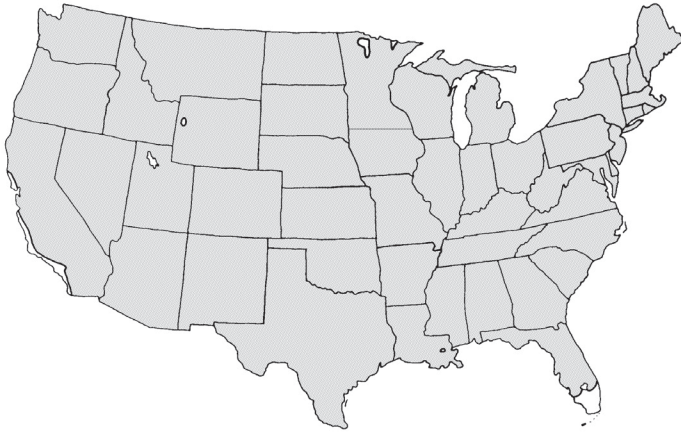


Figure 2. Range

Description

Height: 25 to 45 feet

Spread: 20 to 30 feet

Crown uniformity: symmetrical

Crown shape: oval, columnar, pyramidal

Crown density: moderate

Growth rate: fast

Texture: fine

Foliage

Leaf arrangement: opposite or sub-opposite

Leaf type: simple

Leaf margin: entire, terminal spine

Leaf shape: awl-like, scale-like

Leaf venation: none, or difficult to see

Leaf type and persistence: evergreen

Leaf blade length: < 2 inches

Leaf color: paler green when young, becoming dark green with maturity

Fall color: no color change

Fall characteristic: not showy



Figure 3. Leaf - *Juniperus virginiana*: red cedar
Credits: UF/IFAS

Flower

Flower color: yellow, green

Flower characteristics: not showy



Figure 4. Cone, Young - *Juniperus virginiana*: red cedar
Credits: UF/IFAS

Fruit

Fruit shape: round, berry-like

Fruit length: ¼ inch

Fruit covering: fleshy

Fruit color: dark blue and glaucous

Fruit characteristics: attracts birds; showy; fruit/leaves not a litter problem; aromatic

Trunk and Branches

Trunk/branches: branches droop; showy; typically one trunk; no thorns

Bark: reddish brown to gray, thin, and peeling

Pruning requirement: little required

Breakage: susceptible to breakage

Current year twig color: brown, green

Current year twig thickness: thin

Wood specific gravity: 0.47



Figure 5. Bark - *Juniperus virginiana*: red cedar
Credits: Gitta Hasing, UF/IFAS

Culture

Light requirement: full sun to partial shade

Soil tolerances: clay; sand; loam; alkaline; acidic; well-drained

Drought tolerance: high

Aerosol salt tolerance: high

Other

Roots: not a problem

Winter interest: no

Outstanding tree: no

Ozone sensitivity: tolerant

Verticillium wilt susceptibility: resistant

Pest resistance: free of serious pests and diseases

Use and Management

The dense growth and attractive foliage make red cedar a favorite for windbreaks, screens, and wildlife-cover for

large-scale landscapes. Its high salt-tolerance makes it ideal for seaside locations. Red cedar can make a nice Christmas tree, and the fragrant wood is popular for repelling insects. Although not currently used often as a street tree, its wood is strong, the foliage is clean, and the fruit is small making it a suitable candidate. There are some nice examples of street tree use in southern cities. With proper pruning to remove lower branches, it should adapt well to street-scapes.

Planted in full sun or partial shade, red cedar will easily grow on a variety of soils, including clay, but will not do well on soils kept continually moist. Growth may be poor in landscapes which are over-irrigated. Plants are difficult to transplant due to a coarse root system, except when quite small. Water until well-established and then forget about the tree. It performs admirably with no care, even on alkaline soil and along the coast. Usually insects and diseases are not a problem if grown in the full sun. There may be local restrictions on planting this tree near apple orchards because it is the alternate host for cedar-apple rust.

Some nurseries carry a cultivar or two of red cedar.

Cultivars include: 'Burkii'—pyramidal, blue foliage, 15 to 25 feet tall; 'Canaertii'—compact, pyramidal, good fruit production, fairly common in Texas; 'Hillspire'—(cupressifolia), good green color; 'Elegantissima'—Goldtip red cedar with branchlets with yellow tips, less than 20 feet tall; 'Filifera'—pyramidal, branchlets divided, foliage gray green; 'Glauca'—Silver Red cedar, narrow, columnar, 15 to 20 feet tall, silvery blue foliage especially in spring. 'Ketlerii' is commonly available in the mid-west, is more open with spaces between branches at the top of the tree, pyramidal; 'Manhattan Blue'—compact, 20 feet tall, pyramidal, foliage bluish green; 'Pendula'—Weeping Red cedar, branchlets pendulous, to 40 feet tall; 'Pyramidalis Dundee'—pyramidal, purplish green in winter; 'Skyrocket'—silver-blue foliage, narrow columnar form.

Pests

Usually none are serious.

Bagworm caterpillars occasionally web foliage and debris together to make bags up to two inches long. The insects live in the bags and emerge to feed on the foliage. Use sprays of *Bacillus thuringiensis*. The insects can also be picked off the plants by hand.

Juniper scale causes yellowed needles, and infected branches fail to produce new growth. The scale is round and at first white, later turning gray or black.

The Juniper webworm webs twigs and needles together, causing them to brown and die. The larva is 1/2-inch-long and is brown with darker stripes. The larvae are often in the densest part of the plant and can go unnoticed.

Mites cause stippled and bronzed foliage.

Diseases

Twig blights cause death and browning of twigs tips. The diseases may progress down the stem killing the whole branch. Small lesions may be seen at the base of dead tissue. Prune out dead branch tips. Dieback from *Kabatina* blight appears in early spring, from *Phomopsis* in summer.

Three rust diseases seen most often are cedar-apple rust, hawthorn rust, and quince rust. The most common is cedar-apple rust. On Juniper the first two diseases form galls and orange jelly-like horns in spring. The horns are most likely to form following periods of rainy, warm weather. Spores formed in the horns infect the alternate host. The diseases are more serious on the alternate host than Juniper. There may be local restrictions on planting this tree near apple orchards because it is the alternate host for cedar-apple rust. A separation of a few hundred yards may help avoid the disease. Prune out the spore horns when seen in the spring. Do not plant near hawthorns, apples, or crabapples.

Junipers are not tolerant of ice coatings. Expect dieback when Junipers are covered with ice for several days. Removing the ice is impractical.

Reference

Koeser, A. K., Hasing, G., Friedman, M. H., and Irving, R. B. 2015. Trees: North & Central Florida. University of Florida Institute of Food and Agricultural Sciences.

Quercus virginiana: Southern Live Oak¹

Edward F. Gilman, Dennis G. Watson, Ryan W. Klein, Andrew K. Koeser, Deborah R. Hilbert, and Drew C. McLean²

Introduction

A large, sprawling, picturesque tree, usually graced with Spanish moss and strongly reminiscent of the Old South. Southern live oak is one of the broadest spreading of the oaks, providing large areas of deep, inviting shade. It is the state tree of Georgia. Reaching 60 to 80 feet in height with a 60 to 120 foot spread and usually possessing many sinuously curved trunks and branches, Southern live oak is an impressive sight for any large-scale landscape. An amazingly durable American native, it can measure its lifetime in centuries if properly located and cared for in the landscape. It makes an excellent street tree in the South. Unfortunately, oak wilt has devastated the tree in parts of central Texas. Give it plenty of room since the trunk can grow to more than six feet in diameter.

General Information

Scientific name: *Quercus virginiana*

Pronunciation: KWERK-us ver-jin-ee-AY-nuh

Common name(s): live oak, southern live oak

Family: *Fagaceae*

USDA hardiness zones: 7B through 10B (Figure 2)

Origin: native to the Atlantic and Gulf Coastal states of the southeastern United States, in addition to south central Texas, and northeastern Mexico

UF/IFAS Invasive Assessment Status: native

Uses: street without sidewalk; shade; specimen; reclamation; parking lot island > 200 sq ft; tree lawn > 6 ft wide; urban tolerant; highway median



Figure 1. Full Form—*Quercus virginiana*: southern live oak

Description

Height: 60 to 80 feet

Spread: 60 to 120 feet

Crown uniformity: symmetrical

Crown shape: spreading, round

Crown density: dense

Growth rate: moderate

Texture: fine

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2. Edward F. Gilman, professor emeritus, Environmental Horticulture Department; Dennis G. Watson, former associate professor, Agricultural Engineering Department; Ryan W. Klein, graduate assistant, Environmental Horticulture Department; Andrew K. Koeser, assistant professor, Environmental Horticulture Department, UF/IFAS Gulf Coast Research and Education Center; Deborah R. Hilbert, graduate assistant, Environmental Horticulture Department, GCREC; and Drew C. McLean, biological scientist, Environmental Horticulture Department, GCREC; UF/IFAS Extension, Gainesville, FL 32611.

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Figure 2. Range

Foliage

Leaf arrangement: alternate

Leaf type: simple

Leaf margin: entire

Leaf shape: elliptic (oval), linear

Leaf venation: pinnate

Leaf type and persistence: semi-evergreen, evergreen

Leaf blade length: 2 to 5 inches

Leaf color: dark green and glossy on top, paler green and may or may not have pubescence underneath

Fall color: no color change

Fall characteristic: not showy



Figure 3. Leaf—*Quercus virginiana*: southern live oak

Flower

Flower color: male—yellow-green catkin; female—green to reddish spike that emerges from leaf axils

Flower characteristics: not showy

Flowering: early spring



Figure 4. Canopy—*Quercus virginiana*: southern live oak



Figure 5. Flower—*Quercus virginiana*: southern live oak

Fruit

Fruit shape: elongated, oval

Fruit length: $\frac{3}{4}$ inch

Fruit covering: dry or hard acorn; cap is bowl-shaped, warty, scales and covers the top $\frac{1}{3}$ of the shiny nut

Fruit color: dark brown

Fruit characteristics: attracts birds; not showy; fruit/leaves a litter problem

Trunk and Branches

Trunk/branches: branches droop; showy; typically one trunk; no thorns

Bark: reddish brown and furrowed when young, turning gray to almost black, and becoming rough, deeply furrowed, and blocky with age

Pruning requirement: needed for strong structure

Breakage: resistant

Current year twig color: gray

Current year twig thickness: thin

Wood specific gravity: 0.88



Figure 6. Bark—*Quercus virginiana*: southern live oak

Credits: Gitta Hasing

Culture

Light requirement: full sun to partial shade

Soil tolerances: clay; sand; loam; alkaline; acidic; occasionally wet; well-drained

Drought tolerance: high

Aerosol salt tolerance: high

Other

Roots: can form large surface roots

Winter interest: no

Outstanding tree: yes

Ozone sensitivity: unknown

Verticillium wilt susceptibility: resistant

Pest resistance: resistant to pests/diseases

Use and Management

Once established, live oak will thrive in almost any location and has very good wind resistance. Southern live oak is a tough, enduring tree that will respond with vigorous growth to plentiful moisture on well-drained soil. Like other oaks, care must be taken to develop a strong branch structure early in the life of the tree. Be sure to eliminate multiple trunks and branches which form a narrow angle

with the trunk as these are likely to split from the tree as it grows older.

Be sure that adequate soil space is given to live oak.

Although roots will grow under curbs and sidewalks when planted in confined soil spaces allowing the tree to thrive in urban sites, in time, they lift sidewalks, curbs, and driveways. This may be a small price to pay for the bountiful shade cast by a row of healthy trees.

One of the biggest problems with live oak in our cities is the lack of pruning. Therefore, it is not a plant-and-forget tree. Because this tree can live for such a long time, it is very important to develop proper trunk and branch structure early in the life of the tree. Following planting in the nursery, prune the tree each year for the first three years, then every five years to age 30. This program will help ensure that the tree develops into a strong, long-lived fixture in the community, and will help develop the 14 to 15 foot tall vehicle clearance needed for planting along city streets.

Best growth is made in moist, acid soil, sand, loam, or clay, but the tree is amazingly adapted to drought. It also tolerates alkaline soil well. Young trees grow three feet each year and the trunk adds about one-inch in diameter under nursery conditions. Construction-impacted trees take a long time to die, giving live oak a reputation for being a tough tree. It is usually the last tree to die around a newly constructed building.

Sand live oak, *Quercus virginiana* var. *geminata* (*Q. geminata*), grows on sandy soil, is more upright and open-crowned in habit, has thick revolute leaves and acorns produced in pairs. It may be more suited for street tree planting due to the smaller size. Leaves emerge about four weeks after live oak and sand live oak suckers more than live oak. The fast-growing variety 'Heritage' is recommended for desert areas, and is more common in the southwestern United States. *Quercus fusiformis* is native to central and southern Texas, is susceptible to oak wilt but resistant to root rot. Perhaps more adapted to Texas than *Quercus virginiana* but nursery operators do not normally differentiate among the live oaks.

Pests

It is usually pest-free. Occasionally mites infest the foliage, but they are of little concern in the landscape.

Galls cause homeowners much concern. There are many types and galls can be on the leaves or twigs. Most galls are harmless so chemical controls are not suggested.

Scales of several types can usually be controlled with sprays of horticultural oil.

Aphids cause distorted growth and deposits of honeydew on lower leaves. On large trees, naturally-occurring predatory insects will often bring the aphid population under control.

Boring insects are most likely to attack weakened or stressed trees. Newly planted young trees may also be attacked. Keep trees as healthy as possible with regular fertilization and water during dry weather.

Diseases

It is usually disease-free except for oak wilt in parts of Texas and perhaps some other isolated areas. Oak wilt is a fatal disease beginning with a slight crinkling and paling of the leaves. This is followed by leaf wilting and browning of leaf margins then working inward. The symptoms move down branches toward the center of the tree. Cut down and destroy infected trees. The disease may be spread by insects, pruning tools or transporting infected wood to uninfected areas. The disease appears to infect red, black, and live oaks particularly. Common practice in Texas where oak wilt is most prevalent is to immediately paint pruning cuts on live oak with pruning paint to help prevent the insect vector from coming to the tree. Avoid pruning in midspring to early summer in areas where oak wilt is present. Dormant or summer pruning is best.

Canker diseases attack the trunk and branches. Keep trees healthy by regular fertilization. Prune out diseased or dead branches.

A large number of fungi cause leaf spots but are usually not serious. Rake up and dispose of infected leaves.

Powdery mildew coats leaves with fugal growth resembling white powder.

Shoestring root rot attacks the roots and once inside moves upward, killing the cambium. The leaves on infected trees are small, pale, or yellowed and fall early. There is no practical control. Healthy trees may be more resistant than trees of low vigor. Recently, *Quercus virginiana* has been found to be susceptible to *Diplodia* spp.

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Koeser, A. K., Hasing, G., Friedman, M. H., and Irving, R. B. 2015. Trees: North & Central Florida. Gainesville: University of Florida Institute of Food and Agricultural Sciences.

Koeser, A.K., Friedman, M.H., Hasing, G., Finley, H., Schelb, J. 2017. Trees: South Florida and the Keys. Gainesville: University of Florida Institute of Food and Agricultural Sciences.

Betula nigra: River Birch¹

Edward F. Gilman, Dennis G. Watson, Ryan W. Klein, Andrew K. Koeser, Deborah R. Hilbert, and Drew C. McLean²

Introduction

River birch can grow 50 to 90 feet tall but is often seen 40 to 50 feet. It normally grows with a central leader and small-diameter, dark-colored lateral branches. It has a narrow, oval to pyramidal crown when young, spreading wider with age as several branches become dominant. It lacks the white trunk bark associated with other birches but is distinguished by reddish-brown bark peeling off in film-like papery curls providing interest all year round. River birch can be easily trained with one central leader or as a multi-stemmed tree. Some nurseries plant two or three trees together to form a clump, but these trunks will not fuse into one strong trunk. Should be grown more as a single-trunked specimen. Branches droop particularly when they are wet, so regular pruning in the early years will be required to remove lower branches when they are located close to areas where clearance is needed for vehicular traffic.

General Information

Scientific name: *Betula nigra*

Pronunciation: BET-yoo-luh NYE-gruh

Common name(s): river birch

Family: *Betulaceae*

USDA hardiness zones: 4A through 9A (Figure 2)



Figure 1. Full Form - *Betula nigra*: river birch
Credits: Gitta Hasing, UF/IFAS

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Origin: native to the southeastern United States, including adjacent northern states, and the northern range of the Mississippi River

UF/IFAS Invasive Assessment Status: native

Uses: hedge; street without sidewalk; screen; shade; specimen; deck or patio

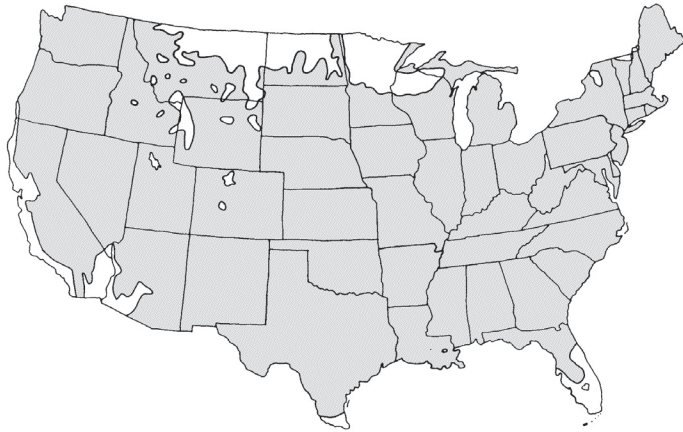


Figure 2. Range

Description

Height: 40 to 50 feet

Spread: 25 to 35 feet

Crown uniformity: symmetrical

Crown shape: upright/erect, pyramidal, oval

Crown density: dense

Growth rate: fast

Texture: medium

Foliage

Leaf arrangement: alternate (Figure 3)

Leaf type: simple

Leaf margin: double serrate



Figure 3. Leaf - *Betula nigra*: river birch
Credits: Gitta Hasing, UF/IFAS

Leaf shape: rhomboid, ovate

Leaf venation: pinnate

Leaf type and persistence: deciduous

Leaf blade length: 1 to 4 inches

Leaf color: dark green on top, paler green underneath

Fall color: yellow

Fall characteristic: not showy

Flower

Flower color: brown

Flower characteristics: not showy

Flowering: mid spring

Fruit

Fruit shape: elongated

Fruit length: 1 to 1 ½ inches

Fruit covering: dry or hard; cone-like catkin with many winged nutlets

Fruit color: reddish-brown

Fruit characteristics: does not attract wildlife; not showy; fruit/leaves not a litter problem

Fruiting: matures in the fall



Figure 4. Fruit - *Betula nigra*: river birch
Credits: Gitta Hasing, UF/IFAS

Trunk and Branches

Trunk/branches: branches droop; very showy; typically multi-trunked; no thorns

Bark: reddish brown to creamy yellow and smooth, becoming papery and flaking or peeling off in large, curling plates with age

Pruning requirement: little required
Breakage: resistant
Current year twig color: reddish, brown
Current year twig thickness: thin
Wood specific gravity: unknown



Figure 5. Bark - *Betula nigra*: river birch
Credits: Gary Kling, UF/IFAS

Culture

Light requirement: full sun to partial shade
Soil tolerances: clay; sand; loam; acidic; wet to well-drained
Drought tolerance: moderate
Aerosol salt tolerance: low

Other

Roots: not a problem
Winter interest: yes
Outstanding tree: yes
Ozone sensitivity: tolerant
Verticillium wilt susceptibility: resistant
Pest resistance: resistant to pests/diseases

Use and Management

It is very well suited for planting along stream banks where it is native and in other areas that are inundated for weeks. River birch tolerates low soil oxygen, flooding, and clay soil, but needs moist conditions. The tree requires an acid soil, otherwise it becomes chlorotic. River birch is hardy, grows rapidly, but tends to be short-lived (30 to 40 years) in many urban settings, possibly due to inadequate water supply. Situate the tree so it receives adequate water. Large trees are prone to trunk decay. Not a tree to plant and forget due to irrigation requirement.

The tree is not as susceptible to bronze birch borer as are other birches. It is not particularly adapted to heat but can make a nice tree in USDA hardiness zone 8b, possibly 9a, if provided with irrigation and plenty of soil space. Not for confined street tree pits or tree lawns in the South. The yellow fall color display is of short duration.

The cultivar 'Heritage' grows 50 feet tall, has an oval shape and scaly bark that is beige in color, and is the closest to a paper white birch that will survive in hot areas; it grows from Minnesota to Florida. It is also tolerant of poor drainage. It is reportedly resistant to bronze birch borer and unlike most birches it is resistant to leaf spot. It is more vigorous than the species.

Pests

No pests are of major concern. Resistant to bronze birch borer.

Diseases

Leaf spots; chlorosis on soils with a high pH.

Reference

Koeser, A. K., Hasing, G., Friedman, M. H., and Irving, R. B. 2015. Trees: North & Central Florida. University of Florida Institute of Food and Agricultural Sciences.

***Quercus geminata*, Sand Live Oak¹**

Melissa H. Friedman, Michael G. Andreu, Heather V. Quintana, and Mary McKenzie²

Family

Fagaceae, beech and oak family.

Genus

Quercus comes from the Latin name for “oak” and is formed from two Celtic words: *quer* meaning “beautiful” and *cuez* meaning “tree.”

Species

The species name *geminata* stems from the Latin term *gemin*, meaning “united in pairs, twins, double,” and probably refers to the fact that acorns often occur in pairs.

Common Name

Sand Live Oak

This species is commonly known as sand live oak because it exhibits many morphological characteristics similar to those of the live oak (*Quercus virginiana*). However, it grows in sandy, scrub habitat and does not reach the towering dimensions of the live oak.

Description

This small, native, evergreen tree is found along the coastal plain of Louisiana east to North Carolina and south throughout most of peninsular Florida. It can be found in the xeric sandy soils of coastal dunes, hardwood forests, mixed pine uplands, scrub, and sandhills. Sand live

oak grows best in partial shade to full sun and generally reaches heights of 50 feet, but has been documented as reaching heights as tall as 95 feet. The thick, leathery leaves are simple and alternate and range from 1½ to 2½ inches long. They are elliptical in shape with coarse veins that are deeply pressed into the leaf surface, and they have smooth margins that are, in many cases, highly revolute or inwardly curling. The upper surface of the leaf is dark green and the underside is a dull gray to almost whitish color with sparse to copious pubescence or hairs. The presence of this leaf pubescence, along with the upper surface venation, can aid in distinguishing sand live oak from live oak. The twigs also will have some pubescence when they are immature. The bark is rough to the touch, dark brown, and deeply furrowed. Acorns range from ⅝ to 1 inch long with ⅓ of the dark brown, egg-shaped nut enclosed in a scaly, whitish gray cup. Acorns are produced annually and appear in groups of 1 to 3 in the fall.



Figure 1. Leaves and acorns of *Quercus geminata*.
Credits: Homer Edward Price, CC BY 2.0

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Figure 2. Mature specimen of *Quercus geminata* seen in Kissimmee Prairie State Park, Florida.

Credits: Homer Edward Price, CC BY 2.0

Allergen

All members of this genus are known to produce large amounts of pollen, making both deciduous and evergreen oaks highly to extremely allergenic.

Storm Tolerance

Sand live oak is highly resistant to wind.

Applications

Horticultural

Though it is a smaller-statured tree, sand live oak may be used for landscaping in the same way that live oak is used. A fact to keep in mind when selecting sand live oak at a nursery is that some forms are shrubbier and less treelike than others. Before making a purchase, ask the nursery staff whether mature specimens are available to view the growth form. This will ensure that trees purchased will meet any sought-after requirements. Homeowners and others should be aware that the leaves and acorns of this tree are high in tannin, which can stain concrete.

Wildlife

The sand live oak's annual production of acorns provides many species of wildlife with a food source.

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Magnolia virginiana: Sweetbay Magnolia¹

Edward F. Gilman, Dennis G. Watson, Ryan W. Klein, Andrew K. Koeser, Deborah R. Hilbert, and Drew C. McLean²

Introduction

Sweetbay magnolia is a graceful southern, evergreen to semi-evergreen, wide columnar tree, ideal for use as a patio tree or specimen. It can grow to a mature height of 50 feet in the north or to 60 feet in the south. Trees glimmer in the wind due to the whitish-green undersides of the leaves. They are very noticeable as you drive by them on interstates along water-logged woodlands. The tree provides excellent vertical definition in a shrub border or as a free-standing specimen and flourishes in moist, acid soil such as the swamps in the eastern U.S. and along stream banks. The creamy-white, lemon-scented flowers appear from June through September, and are followed by small red seeds which are used by a variety of wildlife. It can be trained into a multi-trunked, spreading specimen plant, or left with the central leader intact as a wide column.

General Information

Scientific name:

Pronunciation: mag-NO-lee-uh ver-jin-ee-AY-nuh

Common name(s): sweetbay magnolia, swamp magnolia

Family: *Magnoliaceae*

USDA hardiness zones: 5A through 10A (Figure 2)

Origin: native to the Gulf and Atlantic Coastal Plains, from East Texas to New York

UF/IFAS Invasive Assessment Status: native



Figure 1. Full Form - *Magnolia virginiana*: sweetbay magnolia
Credits: UF/IFAS

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2. Edward F. Gilman, professor emeritus, Environmental Horticulture Department; Dennis G. Watson, former associate professor, Department of Agricultural and Biological Engineering Department; Ryan W. Klein, graduate assistant, Environmental Horticulture Department; Andrew K. Koeser, assistant professor, Environmental Horticulture Department, UF/IFAS Gulf Coast Research and Education Center; Deborah R. Hilbert, graduate assistant, Environmental Horticulture Department, GCREC; and Drew C. McLean, biological scientist, Environmental Horticulture Department, GCREC; UF/IFAS Extension, Gainesville, FL 32611.

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Uses: deck or patio; specimen; street without sidewalk; espalier; tree lawn 4-6 feet wide; tree lawn > 6 ft wide; highway median



Figure 2. Range

Description

Height: 40 to 50 feet
Spread: 15 to 25 feet
Crown uniformity: symmetrical
Crown shape: columnar, vase
Crown density: moderate
Growth rate: moderate
Texture: medium

Foliage

Leaf arrangement: alternate
Leaf type: simple



Figure 3. Leaf, Top - *Magnolia virginiana*: sweetbay magnolia
Credits: UF/IFAS

Leaf margin: entire
Leaf shape: elliptic (oval), oblong
Leaf venation: brachidodrome, pinnate
Leaf type and persistence: deciduous, semi-evergreen, evergreen
Leaf blade length: 2 ½ to 6 inches
Leaf color: green to dark yellow on top, silvery white underneath
Fall color: no color change
Fall characteristic: not showy



Figure 4. Leaf, Under - *Magnolia virginiana*: sweetbay magnolia
Credits: UF/IFAS

Flower

Flower color: creamy white
Flower characteristics: very showy

Fruit

Fruit shape: ovoid; cone-like
Fruit length: 2 inches
Fruit covering: dry or hard
Fruit color: red to brown with maturity
Fruit characteristics: attracts birds; showy; fruit/leaves not a litter problem
Fruiting: late summer

Trunk and Branches

Trunk/branches: branches don't droop; showy; typically multi-trunked; no thorns
Bark: reddish brown to pale gray, smooth, and becoming rough with age



Figure 5. Flower - *Magnolia virginiana*: sweetbay magnolia
Credits: UF/IFAS

Pruning requirement: little required

Breakage: resistant

Current year twig color: green

Current year twig thickness: thin

Wood specific gravity: unknown



Figure 6. Bark, Young - *Magnolia virginiana*: sweetbay magnolia
Credits: UF/IFAS

Culture

Light requirement: full sun to partial shade

Soil tolerances: sand; loam; clay; acidic; wet to well-drained

Drought tolerance: low

Aerosol salt tolerance: low



Figure 7. Bark, Mature - *Magnolia virginiana*: sweetbay magnolia
Credits: Gitta Hasing, UF/IFAS

Other

Roots: not a problem

Winter interest: no

Outstanding tree: yes

Ozone sensitivity: tolerant

Verticillium wilt susceptibility: susceptible

Pest resistance: resistant to pests/diseases

Use and Management

Sweetbay magnolia makes an excellent tree for planting next to buildings, in narrow alleys or corridors, or in other urban areas with limited space for horizontal crown expansion. It has not been planted extensively in downtown urban areas, but its flood and drought tolerance and narrow crown combine to make it a good candidate. It usually maintains a good, straight central leader, although occasionally the trunk branches low to the ground forming a round multi-stemmed, spreading tree. It should be grown and planted more often.

Sweetbay magnolia roots easily from softwood cuttings, grows freely near coastal areas, and is happiest in southern climates. It is thriving in the Auburn Shade Tree Evaluation trials in Alabama without irrigation. However, in the confined soil spaces typical of some urban areas, occasional irrigation is recommended.

The species is deciduous in USDA hardiness zones 7 and 8 (evergreen farther south), but the variety *australis* and cultivar ‘Henry Hicks’ are evergreen. ‘Havener’ has larger flower petals.

Pests and Diseases

Scales sometimes infest foliage and twigs, particularly on dry sites where the tree is under stress.

Tulip-poplar weevil (sassafras weevil) feeds as a leaf miner when young and chews holes in the leaves as an adult.

Leaf spots occasionally occur on the foliage but are of little concern.

References

Koeser, A. K., Hasing, G., Friedman, M. H., and Irving, R. B. 2015. Trees: North & Central Florida. University of Florida Institute of Food and Agricultural Sciences.

Koeser, A.K., Friedman, M.H., Hasing, G., Finley, H., Schelb, J. 2017. Trees: South Florida and the Keys. University of Florida Institute of Food and Agricultural Sciences.

Walter's Viburnum and Other Viburnum Species

Walter's viburnum makes a great addition to the Florida landscape as a small tree or large shrub. This native features a mass of small white flowers in the spring that attract butterflies, and its fall fruit attract birds and other wildlife. But it's not the only viburnum species that can be planted in Florida.

Viburnum is a genus of more than 150 species, but we'll only cover the few that are native to the United States or Florida-Friendly. Walter's viburnum and arrowwood viburnum are both native to the United States. Sweet viburnums are native to parts of Asia, but are considered safe to grow in Florida according to the UF/IFAS Assessment of Non-Native Plants in Florida's Natural Areas. (<https://assessment.ifas.ufl.edu/>)

The food and habitat that viburnum species provide supports wildlife throughout the year. Pollinators are attracted to the nectar, pollen, and scent of the flower clusters. Moths and butterflies are attracted to species with flowers that feature deeper nectar tubes. Viburnum species with shallow nectar tubes and musky scents attract flies and bees. In fall, birds and other wildlife feast on clusters of ripe berries.

Characteristics

Walter's viburnum (*Viburnum obovatum*) is native to the southeastern United States. It is evergreen in USDA Hardiness Zones 7 through 10. Depending on pruning, this plant can be trained into either a large shrub or a small tree. Walter's viburnum can reach up to 20 feet tall, but it's often pruned into a shorter screen or hedge.

Walter's viburnum has fine, dense foliage that adds texture to the landscape. Its branches provide a nesting site for songbirds such as cardinals, and small white flowers attract butterflies in the spring. This species is a host plant for spring azure butterfly larvae (*Celastrina ladon*).

Walter's viburnum is available in dwarf forms like 'Densa'. Other compact cultivars include 'Mrs. Schiller's Delight', 'Walters' Whorled Class', and 'Withlacoochee'. In Florida these are available through native nurseries.

Arrowwood viburnum (*V. dentatum*) is native to the southern United States. Unlike other viburnum species, it is deciduous and grows only as a shrub. It reaches 12 feet tall at its highest, making it a good choice for small spaces. *V. dentatum* is typically found along riverbanks, fertile lands, and swamp borders. It grows in zones 8A through 9B. Like Walter's viburnum it produces white flowers, but the fruits are a more vibrant blue. The cultivar 'Blue Muffin' is particularly stunning.

Sweet viburnum (*V. odoratissimum*) is native to Asia, but is considered well adapted to Florida and non-invasive. It grows in zones 8B through 10A. It grows as a large shrub or small tree and can reach 30 feet tall if not pruned. As a mature tree this species forms a wide canopy and can appear top heavy.

Sweet viburnum has large, leathery, dark green leaves. The foliage is evergreen and small white flowers produce a fragrant scent in the spring. Red berries emerge in the fall and turn black as they ripen.

One notable variety of sweet viburnum is 'Awabuki'. The leaves of 'Awabuki' are much glossier than other sweet viburnums. As a shrub, it is smaller than other sweet viburnums but is still capable of reaching 20 feet tall if not pruned. 'Awabuki' is best grown in USDA Hardiness Zones 9A through 11.

Planting and Care

Viburnums are suitable for mass plantings in residential or commercial landscapes. Because their height is limited, viburnums are a good choice for street-side plantings and under powerlines. Viburnums can also grow in a garden or as a patio tree. More compact forms are a Florida-Friendly alternative to boxwood hedges.

All viburnum species discussed grow in full sun to partial shade. Arrowhead viburnum can also grow in full shade.

Walter's viburnum and sweet viburnum tolerate a variety of soil types, making them particularly drought-tolerant plants. Arrowhead viburnum should be grown on moist but well-drained soils. None of these plants are tolerant of salt.



Walter's viburnum in bloom.



Arrowwood viburnum (*V. dentatum*). Credit: Dow Gardens, Bugwood.org

(<https://www.forestryimages.org/browse/detail.cfm?imgnum=5147072>)

Root suckers are small branches that emerge from the roots near the base of a plant. If the suckers are not regularly managed some species of viburnum will form a thicket. Species such as Walter's viburnum and sweet viburnum may require regular pruning to maintain a strong structure. To avoid a thicket of viburnum, remove the root suckers yearly.

Sweet viburnums need considerable maintenance because of their fast growth rate. They can be pruned into a single- or multi-trunked specimen or a hedge. Regular pruning is necessary to maintain the desired size and shape. Grown as a specimen plant in the open, the branches form a well-kept canopy.

Viburnums experience some pest issues, but attacks are not usually serious. Common pests include viburnum aphids, scale insects, thrips, mites, white-fly, bagworms, and sooty mold. Insects can be removed with a blast from the garden hose. Horticultural oil can be used on scale infestation.

Leafspot is a disease that creates water-soaked spots on leaves and young stems. The spots shrink and turn brown, standing out against the dark green leaf color. Removing the infected leaves will help control the spread of the disease. Downy and powdery mildew cause white powdery growth on leaves but are not often fatal.

For more information about viburnums, contact your county Extension office (<https://sfyl.ifas.ufl.edu/find-your-local-office/>).

Also on Gardening Solutions

[Bird-Friendly Plants \(/design/gardening-with-wildlife/bird-friendly-plants.html\)](/design/gardening-with-wildlife/bird-friendly-plants.html)

[Perfect Plants for Pollinators \(/design/gardening-with-wildlife/bee-plants.html\)](/design/gardening-with-wildlife/bee-plants.html)

[Powdery Mildew vs Downy Mildew \(/care/pests-and-diseases/diseases/powdery-vs-downy.html\)](/care/pests-and-diseases/diseases/powdery-vs-downy.html)

[Shrubs \(/plants/trees-and-shrubs/shrubs/\)](/plants/trees-and-shrubs/shrubs/)

More from UF/IFAS

[Alternatives to Invasive Plants Commonly Found in Central Florida Landscapes](#)



Walter's viburnum (*V. obovatum*) as a small tree in North Central Florida.



A dwarf variety of Walter's viburnum under a palm.

<https://edis.ifas.ufl.edu/pdf/EP/EP46800.pdf> (PDF)

[Selecting Firewise Shrubs to Reduce Wildfire Risk \(https://edis.ifas.ufl.edu/pdf/FR/FR33400.pdf\)](https://edis.ifas.ufl.edu/pdf/FR/FR33400.pdf) (PDF)

Viburnum obovatum: Walter's Viburnum (<https://edis.ifas.ufl.edu/publication/FP604>)

Viburnum odoratissimum: Sweet Viburnum (<https://edis.ifas.ufl.edu/publication/ST659>)

Viburnum odoratissimum var. *awabuki*: Awabuki Sweet Viburnum (<https://edis.ifas.ufl.edu/publication/ST660>)



Viburnum

*Click on picture for more images of this species.

- **USDA Hardiness Zone:** 7A - 10B
- **Mature Height:** 8 to 25 ft
- **Mature Spread:** 6 to 10 ft
- **Growth Rate:** Moderate
- **Availability:** Available as shrub, less so as a tree
- **Drought Tolerance:** High
- **Salt Tolerance:** Poor
- **Light Requirements:** Full sun to partial sun.
- **Native Origin:** Native to Florida
- **Soil Drainage:** Tolerates well-drained sites to occasionally wet sites.
- **Foliage:** Evergreen tree with no showy fall color.
- **Flowers:** White, showy flowers in mid-winter.
- **Pests:** Free of serious pests and diseases.



Description: Walters Viburnum, in the opinion of some nursery growers, is the very best Viburnum for use in Central and South Florida. Unfortunately, it is not widely available as a tree. It is a shrub or small tree that can grow to a height of about 25 feet. However, there are forms of this plant that are upright, spreading, weeping or dwarf. It is difficult to determine which form you are buying by simply looking at the plant. The only way to determine the ultimate height and shape of the plant is to know the original source of the plant material. A reputable nursery will know the characteristics of their plants. Cultivars are now available in different sizes and forms.

The evergreen leaves of Walters Viburnum vary from very small to medium sized, glossy, leathery, and dark green. They are also fragrant when crushed. The winter or spring flowers occur in small, convex cymes held at the branch tips before new growth emerges. Flowers can cover the plant with white blooms for about 2 or three weeks in winter. The fruits of this plant are small drupes that turn from red to black during maturation.

Walters Viburnum may be utilized in the landscape as a fine-textured, clipped hedge or tall screen. Small leaves make it a great candidate for shearing into a topiary, espalier or formal hedge. Older specimens can be trained into small trees with several trunks. Nurseries can also train young plants to grow in this manner with one central trunk. Walters Viburnum will grow well in a site that receives full sun or shade. It is native to acidic wetland forests which are frequently inundated for a period of time during the year, but it tolerates a broad range of growing conditions including moderate drought.

Gainesville Observations: Trees are easy to grow into a single dominant trunk since there are so many branches to prune back to. The only caution is that branches are very brittle, at least on the three trees I pruned. Flowers appear in late January/early February at a time when little else is in flower. This should make a good small street or parking lot tree for urban landscapes. It is one of my favorite small trees for Florida landscapes.

[Fact Sheet \(pdf\)](#)

[Click here](#) for more photos of this tree.

Quercus alba: White Oak¹

Edward F. Gilman, Dennis G. Watson, Ryan W. Klein, Andrew K. Koeser, Deborah R. Hilbert, and Drew C. McLean²

Introduction

White oak is a long-lived, slow-growing tree, reaching 60 to 100 feet in height with a spread of 50 to 80 feet in its native bottomland soil. Old specimens can be massive, growing to be several hundred years old. Since trunks can be six feet in diameter leave plenty of room for this tree in the landscape. The trunk flares out at the base lifting sidewalks and curbing if planted in tree lawns less than eight feet wide. The red fall color is fairly reliable year to year and is outstanding among the oaks in USDA hardiness zones 8a and colder areas. Brown leaves may be held on the tree into the early part of the winter.

General Information

Scientific name: *Quercus alba*

Pronunciation: KWERK-us AL-buh

Common name(s): white oak

Family: *Fagaceae*

USDA hardiness zones: 3B through 8B (Figure 2)

Origin: native to the eastern half of the United States, and southern Quebec and Ontario, Canada

UF/IFAS Invasive Assessment Status: native

Uses: specimen; parking lot island > 200 sq ft; tree lawn > 6 ft wide; highway median; shade



Figure 1. Full Form - *Quercus alba*: white oak
Credits: UF/IFAS

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2. Edward F. Gilman, professor emeritus, Environmental Horticulture Department; Dennis G. Watson, former associate professor, Department of Agricultural and Biological Engineering Department; Ryan W. Klein, graduate assistant, Environmental Horticulture Department; Andrew K. Koeser, assistant professor, Environmental Horticulture Department, UF/IFAS Gulf Coast Research and Education Center; Deborah R. Hilbert, graduate assistant, Environmental Horticulture Department, GCREC; and Drew C. McLean, biological scientist, Environmental Horticulture Department, GCREC; UF/IFAS Extension, Gainesville, FL 32611.

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Figure 2. Range

Description

Height: 60 to 100 feet

Spread: 50 to 80 feet

Crown uniformity: irregular

Crown shape: pyramidal, round

Crown density: moderate

Growth rate: slow

Texture: medium

Foliage

Leaf arrangement: alternate

Leaf type: simple

Leaf margin: lobed, parted

Leaf shape: obovate, oblong

Leaf venation: pinnate



Figure 3. Leaf - *Quercus alba*: white oak
Credits: UF/IFAS

Leaf type and persistence: deciduous

Leaf blade length: 2 to 8 inches

Leaf color: blue green and shiny on top, paler green to almost white underneath with slight pubescence

Fall color: red

Fall characteristic: showy

Flower

Flower color: male – yellow-green; female – reddish-green

Flower characteristics: not showy; male – 2 to 4 inch long catkins; Female – spike that emerges from leaf axils

Flowering: mid spring, with the leaves



Figure 4. Flower - *Quercus alba*: white oak
Credits: UF/IFAS

Fruit

Fruit shape: oval

Fruit length: ½ inch

Fruit covering: dry or hard pubescent acorn; cap is bowl-shaped, thin, flattened, slightly pubescent, and covers 1/3 to 1/2 of the nut

Fruit color: orange-brown

Fruit characteristics: attracts squirrels/mammals; not showy; fruit/leaves a litter problem

Fruiting: early fall

Trunk and Branches

Trunk/branches: branches droop; showy; typically one trunk; no thorns

Bark: whitish, scaly, and flaking in irregular blocks or plates with age, smooth patches are also common

Pruning requirement: little required

Breakage: resistant

Current year twig color: brown

Current year twig thickness: medium, thick

Wood specific gravity: 0.68



Figure 5. Fruit - *Quercus alba*: white oak
Credits: UF/IFAS



Figure 6. Bark - *Quercus alba*: white oak
Credits: Gitta Hasing, UF/IFAS

Culture

Light requirement: full sun to partial shade

Soil tolerances: clay; sand; loam; acidic; moist but well-drained

Drought tolerance: moderate

Aerosol salt tolerance: high

Other

Roots: not a problem

Winter interest: yes

Outstanding tree: no

Ozone sensitivity: tolerant

Verticillium wilt susceptibility: resistant

Pest resistance: resistant to pests/diseases

Use and Management

White oak has a stately silhouette all year long. It is one of the best-looking oaks in the winter due to the light grey, platey bark and open crown. The trunk is straight with main branches well-attached to the tree making this a long-lived, durable tree for large, wide-open landscapes. Best to leave the area within the drip line totally undisturbed if attempting to save an existing tree on a construction site.

Transplant white oak when the trees are young since the deep-growing tap root in well-drained soil can make transplanting very difficult. White oak grows in sun or partial shade and prefers an acid, moist, well-drained soil. Unfortunately, it is not readily available in the nursery trade. Not adapted to dry areas. Supply new transplants with plenty of water and mulch the area beneath the canopy to eliminate grass competition.

Propagation of oaks by seed is the most common, but horticulturists are developing techniques for vegetative propagation.

Pests

None normally serious. In spite of a long list of pests found on the oaks, white oak is long-lived and durable if given enough room to develop.

Galls cause homeowners much concern. There are many types and galls can be on the leaves or twigs. Most galls are harmless so chemical controls are not suggested.

Scales of several types are usually controlled with sprays of horticultural oil.

Aphids cause distorted growth and deposits of honeydew on lower leaves. On large trees, naturally-occurring predatory insects will often bring the aphid population under control.

Boring insects are most likely to attack weakened or stressed trees. Newly planted young trees may also be attacked. Keep trees as healthy as possible with regular fertilization and water during dry weather.

Many caterpillars feed on oak. Large trees tolerate some feeding injury without harm. Trees repeatedly attacked, or having some other problem, may need spraying. Tent caterpillars form nests in trees then eat the foliage. The nests can be pruned out when small. Where they occur, gypsy moth caterpillars are extremely destructive on oaks, especially white oak. Fall cankerworm has been a problem in some years.

Twig pruner causes twigs to drop off in the summer. The larvae ride the twig to the ground. Rake up and destroy fallen twigs.

Lace bugs occasionally suck juices from leaves causing them to look dusty or whitish gray. They are usually not serious.

Leaf miners cause brown areas in leaves. To identify leaf miner injury tear the leaf in two across the injury. If the injury is due to leaf miner, upper and lower leaf surfaces are separate and black insect excrement will be seen.

Diseases

None normally serious. In spite of a long list of pests found on the oaks, white oak is long-lived and durable if given enough room to develop.

Anthrachnose may be a serious problem in wet weather. Infected leaves have dead areas following the midrib or larger veins. These light brown blotches may run together and, in severe cases, cause leaf drop. Trees of low vigor, repeatedly defoliated, may die. Trees defoliated several years in a row may need spraying, to allow the tree to recover.

Canker diseases attack the trunk and branches. Keep trees healthy by regular fertilization. Prune out diseased or dead branches.

Leaf blister symptoms are round raised areas on the upper leaf surfaces causing depressions of the same shape and size on lower leaf surfaces. Infected areas are yellowish-white to yellowish-brown. The disease is most serious in wet seasons in the spring but it usually does not need to be treated.

A large number of fungi cause leaf spots but are usually not serious. Rake up and dispose of infected leaves.

Powdery mildew coats leaves with white powdery growth but is not a serious problem.

Shoestring root rot attacks the roots and once inside moves upward, killing the cambium. The leaves on infected trees are small, pale or yellowed and fall early. There is no

practical control. Healthy trees may be more resistant than trees of low vigor.

Chlorosis due to iron-deficiency occurs on high pH soil.

Reference

Koeser, A. K., Hasing, G., Friedman, M. H., and Irving, R. B. 2015. Trees: North & Central Florida. University of Florida Institute of Food and Agricultural Sciences.

Thank you for reviewing the Fact Sheets for the tree species available (while supplies last) for the Adopt-A-Tree free tree drive-thru events.

When completing your online reservation form, insert the PROMO CODE shown below in the space provided on the reservation form. The PROMO CODE is required to reserve free tree(s).

The Fall 2026 PROMO CODE you need to enter on the tree reservation online form is:

2026FALLTREESDAY

The code above is case sensitive so be sure to capitalize the letters at the beginning and enter the code without spaces.



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